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Roger Kennedy

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EXAMINER

LEUNG, JENNIFER A

ART UNIT

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1797

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,922	Applicant(s) KENNEDY, ROGER	
	Examiner JENNIFER A. LEUNG	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,9,13,14 and 32-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,9,13,14 and 32-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 September 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on September 11, 2009 has been considered. The changes made to the Drawings are accepted. Claims 3-8, 10-12 and 15-31 are cancelled. Claims 36 and 37 are new. Claims 1, 2, 9, 13, 14 and 32-37 are under consideration.

Terminal Disclaimer

2. The terminal disclaimers filed on September 11, 2009 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration dates of U.S. Application No. 12/084,833 and U.S. Patent Nos. 7,451,752; 7,409,948 and 7,171,959 have been reviewed and are accepted. The terminal disclaimers have been recorded.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 36 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 36, it is unclear as to how the apparatus could be configured such that "the rotation axis of the shaft extends substantially along the longitudinal axis of the reactor", when it was previously set forth (in claim 1) that "the propeller has a longitudinal shaft defining a rotation axis... the propeller being tilted at an angle of from between 0.5° to 60° with respect to the longitudinal axis of the reactor." As noted from Applicant's specification (see, e.g., page 5, lines 14-17), these two configurations are mutually exclusive: "The axis of the propeller may be

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substantially in alignment with the longitudinal axis of the inlet or outlet *but may alternatively* be at an angle of 0.5° to 60° with respect to the longitudinal axis of the inlet or outlet.”

Furthermore, “the reactor” lacks proper positive antecedent basis.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 9, 13, 14, 32, 34 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (EP 0 614 866) in view of Paladino (US 2,703,304) and Roeckel et al. (EP 0 027 911).

Regarding claims 1, 2, 32, 34, 36 and 37, Yamashita et al. discloses an apparatus (see, e.g., FIG. 6(b)) comprising: a reaction chamber having an inlet (i.e., to disperser head **6**) and an outlet (i.e., to pipe **5**); the reaction chamber being provided with a regulator comprising a propeller (i.e., agitating blades **9**) mounted in the reaction chamber in the region of the inlet **6**; the reaction chamber being provided with at least one perforated element (i.e., perforated disk **7A-2**) that is capable of allowing the passage of fluid material therethrough; and the propeller **9** being mounted beneath the perforated element **7A-2**.

Yamashita et al. discloses that the propeller has a longitudinal shaft defining a rotation axis and at least one blade attached to the shaft (page 10, line 57 to page 11, line 6), the shaft having a rotation axis that extends substantially along the longitudinal axis of the reaction chamber. As seen in FIG. 6(b), the propeller **9** is located closer to the inlet **6** than the outlet **5**.

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Yamashita et al., however, is silent as to the propeller being tilted at an angle of from 0.5° to 60° with respect to the longitudinal axis of the reactor.

Paladino (see figure) teaches a chamber (i.e., defined by container **1**) comprising a propeller, wherein the propeller has a longitudinal shaft **13** defining a rotation axis and at least one blade at **12** attached to the shaft, the propeller being tilted at an angle α of “preferably a few degrees” and “slightly offset” with respect to the longitudinal axis of the chamber (see column 3, lines 10-17; column 2, lines 64-67). The definition of “few” is not many, but more than one. Thus, the angle α lies within the claimed range.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to configure the propeller in the apparatus of Yamashita et al. to be tilted at an angle within the claimed range, because a tilted propeller would provide intimate mixing and homogenizing of the fluids, while preventing the formation of foam, as taught by Paladino (column 1, lines 15-32).

In addition, Yamashita et al. discloses that the propeller preferably produces a downward flow (see page 11, lines 7-14). Yamashita et al., however, does not indicate if the blades may be attached to the longitudinal shaft “by means of an elongated blade root”.

Roeckel et al. teaches a propeller (see FIG. 10) having a longitudinal shaft **530** defining a rotation axis and at least one blade **532** attached to the shaft, wherein the blade is attached by means of an elongated blade root. The propeller produces a downward flow. Such propeller may be used as an alternative to the propeller shown in FIG. 11 for providing the same result.

It would have been obvious for one of ordinary skill in the art at the time the invention was made to substitute a propeller, with blades attached by means of an elongated root, for the

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propeller in the apparatus of Yamashita et al., because such propeller would have been suitable for providing satisfactory gas-liquid contacting and downward flow, as taught by Roeckel et al. Furthermore, the substitution of known equivalent structures involves only ordinary skill in the art, and when the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.

Regarding claim 9, Yamashita et al. discloses that the reactor may be provided with a heating means (e.g., an electric heater, not shown, attached to the outer surface of the reactor; see page 9, lines 56-58; see also page 14, lines 56-58). Since the heating means heats the contents of the reactor, the heating means will be capable of indirectly heating the at least one perforated element **7A-2** and the propeller **9** contained within the reactor.

Regarding claim 13, Yamashita et al. discloses that the propeller is connected to a power supply for driving the propeller (i.e., the agitator is electrically powered; see page 9, lines 40-42).

Regarding claim 14, Yamashita et al. discloses that propeller **9** comprises a plurality of vanes (i.e., agitating blades; page 10, line 57 to page 11, line 6). As seen in FIG. 6(b), the vanes are of an ellipse shape.

Regarding claim 35, Yamashita et al. further discloses a process of conducting a chemical reaction using the apparatus set forth in claim 1 (e.g., the hydration of cycloolefin to produce a cyclic alcohol; see page 4, lines 6-12; page 9, lines 31-42; Abstract).

5. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. (EP 0 614 866) in view of Paladino (US 2,703,304) and Roeckel et al. (EP 0 027 911), as applied to claims 1, 2, 9 and 13 above, and further in view of Mineo et al. (US 5,660,467).

Yamashita et al. fails to disclose an electronic control unit, or ECU, associated with the

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apparatus for controlling the degree of heating or speed. Mineo teaches an apparatus (see FIG. 1; generally, column 3, line 39 to column 4, line 41) comprising a propeller (i.e., blades **3** attached to rotary shaft **9**) mounted in a reaction chamber (i.e., container **1**), wherein an ECU (i.e., control unit **7**) is associated with the apparatus, for controlling the speed of the propeller. It would have been obvious for one of ordinary skill in the art at the time the invention was made to provide an ECU in association with the modified apparatus of Yamashita et al., because the ECU would allow for the rotational speed of the propeller to be automatically regulated, e.g., between a high level and a low level, as taught by Mineo et al.

Response to Arguments

6. Applicant's arguments filed September 11, 2009 have been fully considered but they are not persuasive. Applicant (at page 8, first and second paragraphs) argues,

“The Examiner acknowledges that the Yamashita et al. reference does not suggest a propeller being tilted at an angle as recited in amended claim 1. It is believed that Yamashita et al. reference has other deficiencies as well. In particular, the Yamashita et al. reference teaches that there is no required relationship between the axis of the propeller and the center of the reactor. The Yamashita et al. reference also does not teach that the propeller is mounted in the reaction chamber in the region of the inlet.

Paladino is not believed to overcome the above-described deficiencies of Yamashita et al. In this regard, Paladino does not teach "a propeller mounted in the reaction chamber in the region of the inlet for dispersing the at least one reactant in the reactant chamber." The Roecknel et al. reference also does not teach "a propeller mounted in the reaction chamber in the region of the inlet for dispersing the at least one reactant in the reaction chamber." Accordingly, it is submitted that the hypothetical combination of Yamashita et al., Paladino and Roecknel et al. does not suggest the invention defined by amended claim 1.”

The Examiner respectfully disagrees.

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Firstly, contrary to Applicant's argument, Yamashita et al. (see, e.g., FIG. 6(b)) discloses that the propeller (i.e., agitating blades **9**) is mounted in the reaction chamber in the region of the inlet (i.e., disperser head **6**). As seen in the figure, the propeller **9** is located closer to the inlet **6** than the outlet (i.e., to pipe **5**).

Secondly, in response to Applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In the instant case, the primary reference to Yamashita et al. discloses the feature of "a propeller mounted in the reaction chamber in the region of the inlet for dispersing the at least one reactant in the reaction chamber." The secondary reference to Paladino was merely relied upon for its teaching of an angled propeller shaft with respect to the longitudinal axis of a reactor. The secondary reference to Roeckel et al. was merely relied upon for its teaching of an elongated blade root as a means for attaching a blade of a propeller.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

* * *

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNIFER A. LEUNG whose telephone number is (571) 272-1449. The examiner can normally be reached on 9:30 am - 5:30 pm Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter D. Griffin can be reached on (571) 272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer A. Leung/
Primary Examiner, Art Unit 1797